PLACER COUNTY BUILDING DEPARTMENT
RESIDENTIAL PLAN REVIEW SUPPLEMENT

THIS SUPPLEMENT IS AN OFFICIAL PART OF THE APPROVED PLANS AND MUST REMAIN ATTACHED TO THE PLANS.

The following is a reference guide used in review of residential plans and inspections. The items listed are based on the 2001 California Building, Plumbing, Mechanical and Electrical Codes, and the Placer County Code modifications. Whenever there is a conflict between this guide and the adopted/mandated Codes, the Codes shall govern.

GENERAL
(GN)

1. ***Placer County uses the following Codes: 2001 California Building Code (based on the 1997 Uniform Building Code), 2001 California Mechanical Code (based on the 2000 Uniform Mechanical Code), 2001 California Plumbing Code (based on the 2000 Uniform Plumbing Code), The 2001 California Electrical Code (based on the 1999 National Electrical Code). The 2001 issue of the `California Building Energy Efficiency Standards' is used for energy compliance. Some requirements are specified in Chapter 15 of the Placer County Code (PCC), adopted by ordinance 5200-B, effective November 1, 2002.***

2. The address must be posted on the building when visible from the street or shall be located at the street facing in both directions. The numbers need to be a reflectorized 3" high, or plain 5" high, and ⅜" wide on a contrasting background. (PCC Art 15.04.050, O & UBC §502)

GRADING
(GR)

1. Slopes exceeding 15%, or cuts, or fills may require a soil engineer. (UBC App. Chap. 33)

2. All building pads need to be graded with a 2% slope away from the building. (UBC App. §3315.4)

FOUNDATION
(FD)

1. All stumps and roots need to be removed to a depth of 12" below the surface in the building area. (UBC §3302)

2. Minimum footing requirements from UBC Table 18-I-C for poured concrete foundations.

	SUPPORTING ONE FLOOR	SUPPORTING TWO FLOORS
a) Footing Depth	12"	18"
b) Footing Thickness	6"	7"
c) Footing Width	12"	15"
d) Stem Wall Thickness	6"	8"
e) Interior Piers	14" sq. x 12" deep minimum (Supporting one floor only.)	

3. One #4 continuous rebar is required at the top and bottom of each footing/stem wall. (UBC §**1806.7**) Stem walls over 24" high require #4 vertical rebar spaced at not more than 36" o.c. or engineered design. Stem walls more than 48" high require engineered design. (UBC §1914.3) Rebar shall have a minimum of 3" of concrete cover. (UBC §1907.7.1)

4. Footings on slopes of more than 1:10 need to be stepped such that the bottom of the footing and top of the stem wall are level. (UBC §**1806.4** & §**1915.9**)

5. Anchor bolts are to be ½" minimum diameter **and extend at least 7" into the first pour** of concrete foundations. Anchor bolts are to be spaced a maximum of 6' apart or as specified on the plans. A minimum of two bolts are required in each piece of sill plate as well as one bolt within 12" of each end. (UBC §1806.6**)** Plate washers a minimum of 2"x2"x$^{3}/_{16}$" shall be used on each bolt. (UBC §1806.6.1)

6. Walls retaining more than 4' of earth, as measured from the bottom of the footing to the top of the wall, or supporting a surcharge such as a building, or in close proximity to a structure, are to have an engineered design. Retaining walls on the property line may require review by the Planning Department and/or Public Works. (UBC §**1611.6**)

7. The minimum thickness of a concrete slab is 3½". (UBC §1924) Concrete slabs on grade which will have a floor covering require a minimum of 4" of gravel under a minimum 6 mil polyethylene moisture barrier with minimum of 1" of sand on top. (PCC 15.04.050, S & Placer County Building Department Procedure P-159)

8. Conventional non-monolithically poured foundation/slabs require #4 rebar at not more than 36" o.c. from the footing into the slab or 14" long anchor bolts with 7" embedded into the first pour at 6' o.c. or as per engineered design. (UBC §1906.4)

9. Foundations supporting wood shall extend at least 6" above the adjacent finished grade. (UBC §**2306.8**)

10. Weather exposed wood posts located on concrete floors need to be mounted on metal pedestals 1" above the concrete floor and 6" above the adjacent ground. Concrete or masonry piers shall extend 8" above the ground. These requirements are not necessary if pressure treated or decay resistant wood is used. (UBC §**2306.5**)

11. Foundations supported on fill require a satisfactory soil investigation report for compaction and placement of fill. (UBC §3301.1) Ninety percent minimum compaction is required. (UBC App. §3313.4)

12. A minimum 18"x24" under-floor access, unobstructed by pipes or ducts and within 20' of each under-floor plumbing cleanout is required. Provide a screen or cover. (UBC §**2306.3** & UPC §707.10)

13. Concrete or masonry walls of a sub-grade basement need to be damp-proofed on the outside. (UBC §1402.4)

CONSTRUCTION
(FR)

1. **General Construction Requirements:**

a) Wood supports embedded in the ground or embedded in concrete below grade must be pressure treated and rated for direct ground contact. (UBC §**2306.2**)

b) Under floor clearance needs to be 18" to the bottom of joists and 12" to the bottom of girders which are spaced at least 48" apart. (UBC §**2306.3**)

c) Plates, sills and sleepers need to be foundation grade or pressure treated wood. (UBC §**2306.4**)

d) Girders entering masonry or concrete walls need a ½" air space on the top, sides and end. (UBC §**2306.6**)

e) Foundation ventilation needs to be at least 1/150 of the floor area and needs to be equally distributed on at least two opposite sides. (UBC §**2306.7**)

f) Wood to earth separation needs to be 6" minimum unless pressure treated or decay resistant wood is used. (UBC §**2306.8**)

g) Wood retaining walls that are attached to or near the building shall be pressure treated wood. (UBC §**2306.11**)

h) Glu-lam beams exposed to weather shall be pressure treated with an approved preservative or manufactured of decay resistant wood with exterior rated glue. (UBC §**2306.12**)

i) Draft stops are required in single family dwelling floor/ceiling assemblies where the concealed space exceeds 1000 ft². (UBC §708.3.1.1.1)

j) Fire blocking is required to provide a separation between concealed vertical spaces and horizontal spaces, in walls at stair stringers, at soffits and drop ceilings, and at the top and bottom of duct or flue chases. (UBC §708.2.1)

k) Post and beam/girder connections need to have a positive connection such as a post cap or plywood gusset. (UBC §**2314**)

l) Exterior stairs and decks used for exiting purposes need to be anchored to the building to prevent seismic displacement. The use of joist hangers, straps, bolts or other approved means are to be used. Toenails and nails subject to withdrawal are not acceptable. (UBC §**2320.13**)

2. **Floor Framing Requirements:**

a) Floor joists need to bear on a 1x4 ribbon attached to the studs with the joists side-nailed to the stud or shall have 1½" bearing on wood or 3" bearing on masonry. (UBC §**2320.8.2**)

b) Joists need to be laterally supported at ends and at bearing points with blocking or bridging. (UBC §**2320.8.3**)

c) Joists are to be doubled around openings when the opening exceeds 4'. For openings more than 6' framing anchors or joists hangers shall be used. (UBC §**2320.8.4**)

d) Bearing walls perpendicular to joists are not to be offset more than the depth of the joist. Joists parallel to a bearing wall are to be doubled or per engineered design. (UBC §**2320.8.5**)

3. **Wall Framing Requirements:**

a) Stud walls shall be framed with their wide dimension perpendicular to the wall. Studs in bearing walls shall not exceed 10' in height. Studs in non-bearing walls shall not exceed 14' for 2x4 studs and 20' for 2x6 studs. (UBC §**2320.11**)

b) Bearing walls require double top plates with splices lapped 48" minimum and nailed w/16d nails at 16" o.c. (UBC §**2320.11.2**)

c) All exterior walls and main cross-stud partitions, spaced not more than 34' apart, are to be braced within 8' of each end and every 25' of length measured from the center of the each bracing panel. Solid sheathing comprising 25% of the wall length of the exterior walls is required on the first story walls of a two story building with all joints blocked and nailed. The minimum width of a wall section for bracing is 4'. Structures that do not meet the minimum bracing requirements or other provisions as specified in the Code are to be designed by a licensed engineer or architect. Typical wall bracing shall be by one of the criteria listed (UBC §**2320.11.3**):

1) ⅜" diagonal wood siding.
2) $^{5}/_{16}$" wood structural panel on 16" spaced studs or ⅜" wood structural panel on 24" stud spacing.
3) 4x8 panels of ½" fiberboard installed vertically on 16" stud spacing.
4) 4' wide sheets of ½" gypsum wallboard on 24" maximum stud spacing. Minimum 4' panel on each side of studs or 8' on one side for every 25'.
5) Stucco on 16" maximum stud spacing.

Vertical joints are to occur on studs and horizontal joints to occur on blocking. Typical plywood nailing, unless specified otherwise on the plans, is 6" on the edges and 12" in the field.

d) Studs in cripple walls less than 14" high are to be solid blocked or plywood sheathed. When the height exceeds 4', studs and conventional bracing sized for an additional story are to be used. Cripple wall heights exceeding 14" shall be braced in accordance with Table 23-IV-C-2(UBC §**2320.11.5**)

e) Headers are to be sized for the loads imposed and provided with not less than 1½" bearing or more, as required. (UBC §**2320.11.6**)

4. **Roof and Ceiling Framing Requirements:**
a) Rafters to be framed directly opposite each other at the ridge board. The ridge board depth is not to be less than the cut of the rafter. Valleys and hips to be 2x material not less than the cut of the rafter. (UBC §**2320.12.3**)

b) Rafter ties shall tie all opposing exterior walls by use of ceiling joists or 1x4 ties spaced not more than 48" apart and nailed to the rafter as close to the top plate as possible. (UBC §**2320.12.6**)

c) The maximum span of a 2x4 purlin is 4' and a 2x6 purlin is 6'. Purlins are not to be smaller than the rafter. Struts are not to be less than 2x4 and installed at an angle not less than 45° from horizontal. The unbraced length of a strut is not to exceed 8'. (UBC §**2320.12.7**)

d) Rafter, ceiling joists and trusses are to be laterally supported (blocked) to prevent rotation.
(UBC §**2320.12.8**)

e) Roof sheathing joints are to occur over supports. Plywood is to be bonded by intermediate or exterior type glue. Sheathing exposed at the eaves is to be bonded with exterior glue. (UBC §**2320.12.9**) Typical plywood nailing, unless specified otherwise on the plans, is 6" on the edges and 12" in the field.

5. Untreated exterior posts need to be protected from deterioration. Raise the base 1" above exposed concrete, such as patio slabs, and 6" above earth. (UBC §**2306.5**)

6. Weather-exposed surfaces of occupied structures need to have a weather-resistant barrier such as a water-repellant panel siding or kraft building paper under lap siding. The paper needs to be lapped 6" on vertical joints and 2" on horizontal joints. (UBC §1402.1)

7. Wood members shall not be used to permanently support the dead load of masonry or concrete. (UBC §**2307**)

8. Planter boxes need to have a minimum 2" air space to wood walls and when the air space is less than 6" it needs to be flashed and vented. The wall adjacent to the planter needs to have an exterior wall covering. (UBC §**2306.8**)

ROOF
(RF)

1. ***Class A roofing assembly is required in all areas <u>east</u> of a line extending from Sierra College Blvd at the Sacramento County line, extending north along Sierra College Blvd to I-80 then east following I-80 to Highway 49 then north following Highway 49 to the Nevada County line. A Class 'B' roofing assembly is required in all areas <u>west</u> of that same line. All new construction, including additions, requires Class A or B as noted above. All re-roofing requires Class A or B as noted above. Re-roofing in excess of 50% of an existing structure within any one-year period will require upgrading the entire roof to the required classification. (PCC Art 15.04.050, R)***

2. A 22"x30" attic access is required for all attics which are more than 30" in height. The attic access needs to be in an accessible location and is not to be located above a closet shelf or pole. 30" minimum headroom is required above the access. (UBC §1505.1) Attics with equipment need a 30"x30" access. Exception: The access may be 22"x30" when trusses are used, provided the largest piece of equipment can be removed through the opening. (UMC §**307.3**)

3. Attic ventilation needs to be at least 1/150 of the attic area. The area of the ventilation may be reduced to 1/300 if the area is equally distributed between high and low vents. Insulation baffles need to be used to keep the eave vents clear. (UBC §1505.3)

4. Openable skylights need to be at least 10' from plumbing vents and 4' from other vents or flues. (UMC §806.6 & UPC §906.2)

5. Solid sheathing is required in areas of 30# or greater roof snow load, or when specified by the roofing manufacturer, or when required by engineered design.

6. Rafter spaces with gyp-board on one side of the rafter and roof sheathing on the other are to be ventilated. A minimum of 1" of air space shall be provided between the insulation and the roof sheathing. The net free ventilating area shall not be less than 1/150 of the area of the space ventilated. (UBC §1505.3)

7. ***Residential attics in excess of 3,000 square feet or where the attic's horizontal dimension exceed 60 feet must have draft stops installed to reduce the areas/dimensions to less than these amounts. Attic drafts stops may be 3/8" plywood, or ½" drywall. Openings need equal construction and be self-closing with automatic latches. (PCC Art 15.04.050, R)***

FIRE/LIFE/SAFETY
(FLS)

1. A fire separation is required between the garage and house. The garage walls and ceiling, adjacent to or under a dwelling and all structural members supporting the separation require the installation of materials approved for one-hour fire-resistive construction, ⅝" Type 'X' gypsum wallboard, on the garage side of the wall. A self-closing 1⅜" thick tight-fitting solid wood door or a 20 minute rated door is required. The door needs to be equipped with two spring hinges. Ducts penetrating this wall need to be 26 gauge sheetmetal to the appliance. (UBC §302.4 Exception 3)

2. Incidental penetrations in the firewall by pipes not more than 4" diameter, such as central vacuum and plumbing pipes, are to be metal, or may be plastic when protected by a listed fire stopping collar. Sleeves over plastic pipe are not acceptable. (UBC §709.7)

3. No openings are permitted between a garage and rooms used for sleeping/bedrooms. (UBC §312.4)

4. Enclosed usable space under stairs shall have the walls and soffit protected on the enclosed side as required for one-hour fire-resistive construction, ⅝" Type 'X' gypsum wallboard. (UBC §**1003.3.3.9**) Fireblocking is required at the stair stringers and landings between the studs at the stair line if the walls under the stairs are unfinished. (UBC §708.2.1)

5. No fuel burning (gas, oil) water heater or central furnace shall be installed in any bedroom, bathroom, clothes closet or other confined space opening into a bedroom or bathroom. (UPC §509.0 & UMC §304.5) NOTE: Floor, wall and decorative furnaces are not prohibited from being installed in a bedroom, provided the unit is installed per manufacturer's specifications and there is adequate combustion air.

6. In dwelling units a smoke detector shall be installed in each sleeping room and at a point centrally located in the hallway or area giving access to each separate sleeping area. When the dwelling unit has more than one story and in dwelling units with a basement, a smoke detector shall be installed on each story and in the basement. In a dwelling unit where the ceiling height of a room, which is open to the hallway that serves the bedrooms, exceeds the ceiling height of the hallway by 24" or more, smoke detectors shall be installed in the hallway and in the adjacent room. Smoke detectors are to be supplied by the house wiring system, have a battery backup and emit a signal when the batteries are low. (UBC §310.9.1) In new construction, when more than one smoke detector is required to be installed within an individual dwelling, the detectors shall be interconnected in such a manner that the actuation of one alarm will actuate all of the alarms in the dwelling**. *Smoke alarms in additions and remodels are to be interconnected to alarms in the existing home when the wiring for such alarms is exposed in the construction/remodel, or when otherwise accessible through an attic, crawl space, or basement.* (PCC Art 15.04.050, K)**

7. The minimum habitable room area is 70 ft² with a minimum dimension of 7'. (UBC §310.6.2)

8. The required ceiling height in a habitable room is 7'-6". The ceiling height may be 7' at the bottom side of beams spaced at least 48" apart. The ceiling height in the bathroom, kitchen and hallways may be 7'. (UBC §310.6.1)

9. All glazing within a 24" arc of either vertical edge of a door in the closed position and which is within 60" of the walking surface shall be safety glazed. (UBC §2406.4 #6) Glazing in fixed or operable windows which are more than 9 ft² and are within 18" of the floor or walking surface are also to be safety glazed. (UBC §2406.4 #7)

10. Glass in any type of door which a 3" sphere can pass through is to be safety glazed. (UBC §2406.4 #8 Exception 4)

11. Glass tub and shower enclosures and windows within 60" of the standing surface of the tub/shower are to be safety glazed. (UBC §2406.4 #5)

12. A room in which a water closet is located shall be separated from a kitchen or food storage room (pantry) by a tight-fitting door. (UBC §302.6)

13. Glass enclosing a stairway landing or within 5' of the top or bottom of the stairway that has the bottom edge within 60" of the walking surface is to be safety glazed. (UBC §2406.4 #10)

14. Each bedroom and basement is to have at least one escape window or door which has a clear opening that is a minimum 20" wide by 24" high minimum with a net openable area of not less than 5.7 FT². The sill is to be a maximum of 44" above the floor. NOTE: A window that meets the height and width requirements may not meet the minimum openable area. (UBC §310.4)

STAIRS/DECK
(ST)

1. Stairways shall have risers with a maximum height of 8" and a minimum height of 4" with a variation of not more than ⅜" between the highest and shortest risers. The minimum tread depth is 9" with a variation of not more than ⅜" between the longest and shortest treads measured from nose to nose of the treads. (UBC §**1003.3.3.3**)

2. The minimum clear width of a stairway needs to be 36". The handrails may encroach 3½", and stringers 1½", on each side. (UBC §**1003.3.3.2**)

3. The minimum headroom needs to be 6'-8" measured vertically from the plane of the nose of the treads. (UBC §**1003.3.3.4**)

4. Stairway landings shall have a length in the direction of travel equal to the required stairway width, typically 36". The length need not exceed 44" when the stairway has a straight run. An intermediate landing shall be provided for every 12' of stairway height. (UBC §**1003.3.3.5**)

5. Residential stairways may have handrails on one side only. The height of the handrails must be between 34" and 38" above the nosing of the treads. Handrails need to be of a grippable design, 1¼"-2" wide and have 1½" clearance between the handrail and the wall. The ends of the handrail must be returned to a wall or newel post. Stairways open on one or both sides shall have handrails on the open side or sides with intermediate railings spaced such that a 4" sphere cannot pass through any portion of the railing. Stairways having less than four risers do not require handrails. (UBC §**1003.3.3.6**)

6. Handrails must be able to support a 200# load at any point along its length. (UBC Table 16-B #11)

7. When a stairway adjoins a sloping walk or driveway, the top or bottom riser of the stairway may slope 3" per 3' of stairway width. (UBC §**1003.3.3.3** Exception 2)

8. A door in a dwelling or garage may open at the top step of an interior stairway or a landing if the stairway or landing is not more than 8" below the floor level and the door does not swing over the step. Screen and storm doors may open over the stairs or landing. (UBC §**1003.3.1.6**)

9. Landings at doors shall be the width of the stair or door, whichever is greater. The length of landings at doors in dwelling units or garages may be 36" in the direction of travel. (UBC §**1003.3.1.7**)

10. Exterior landings may slope ¼" per foot to allow for drainage. (UBC §**1003.3.1.6**)

11. Guardrails must be at least 36" high with intermediate railings spaced such that a 4" sphere can not pass through any portion of the railing. A guardrail is required on all landings, decks and stairs more than 30" above the adjoining level or ground. (UBC §509)

12. Guardrails need to withstand a 20# per lineal foot horizontal force at the top rail. (UBC Table 16-B #9)

13. Exterior surfaces such as decks, porches or stairs which occur over an enclosed space need to be water-proofed **with a minimum slope of ¼" per foot.** (UBC §1402.3)

PLUMBING/MECHANICAL
(PM)

1. Each plumbing system may use the materials listed:
   a) The building sewer from the house to the street or septic tank may be cast iron, lead, copper, brass, Schedule 40 ABS DWV, Schedule 40 PVC DWV, or extra strength vitrified clay pipe. The minimum depth of the building sewer is 12" to the top of the pipe. (UPC §701.0 & §313.4) Note: Some sewer districts may have more restrictive requirements.

   b) Waste drains inside the building may be cast iron, lead, copper, brass, Schedule 40 ABS DWV or Schedule 40 PVC DWV. Support spacing for the waste piping shall be 4' for plastic, 5' for cast iron, 12' for pipes with screw fittings, 6' for up to 1½" copper and 10' for 2" or larger copper. (UPC §701.0 & §314)

   c) Water piping inside the building may be brass, copper, galvanized iron or galvanized steel supported at 10' for pipes with screw fittings, 6' for up to 1½" copper and 10' for 2" or larger copper. (UPC §314, §604.0 & §609.1)

   d) Water piping outside the building may be PVC or PE in addition to those listed for use inside the building. The minimum depth of water pipes outside the building is 12" to the top of the pipe, or 36" when above 5000' elevation. (UPC §**314.3**, §604.0, §609.1 & PCC §4.20p)

   e) Gas piping inside the building may be wrought iron, steel (black or galvanized), yellow brass or internally tinned copper. Gas piping must be new or previously used for gas only. Supports need to be every 10' for up to ¾" pipe and every 12' for 1" pipe or larger. (UPC §1210.0 & §314)

   f) Gas piping outside the building (underground) may be plastic rated for use with gas, or factory coated steel pipe. Joints in the steel pipe need to be wrapped with PVC tape to a total thickness of 40 mils and extend 6" beyond the ends of the joint. Low pressure steel piping needs to have a minimum coverage of 12" and plastic pipe needs 18" of cover. Medium pressure gas piping to have a minimum of 18" of cover. Plastic piping installed below grade needs to have an 18 gauge tracer wire attached to the pipe for its full length and must terminate above ground at each end. (UPC §1211.5 & §1218.8)

2. Each plumbing system needs to be tested as follows:
   a) The building sewer from the house to the street or septic tank; Provide a standing water test filled to the top of the cleanout. (UPC §723.0)

   b) Waste drains inside the building; Provide a standing water test filled to 10' above the highest drainage fitting or a 5 psi air test. Either test is to hold for a minimum of 15 minutes before inspection. (UPC §712.2 & §712.3)

   c) Gas piping inside the building; Provide a 10# air, CO_2 or nitrogen test holding for a minimum of 15 minutes before inspection. All gas piping is to be covered or concealed within the building prior to inspection and acceptance of the test. Testing of the gas pipe before covering is recommended. Do not use water for testing purposes. (UPC §1204.3.2)

   d) Gas piping outside the building; Low pressure systems need to be tested the same as inside the building. Medium pressure systems, usually found with LPG, need a 60 psi test holding for at least 30 minutes. Do not use water for testing purposes. (UPC §1204.3.2)

3. Where the service water pressure exceeds 80 psi, a pressure regulator needs to be installed to limit the water pressure in the building to 80 psi. A pressure relief valve shall also be installed when a pressure regulator is required. (UPC §608.2)

4. Water heaters, furnaces and dryers installed in a garage which have a glow, spark or ignition source need to be mounted 18" above the floor and protected from auto impact. (UPC §510.1 & UMC §303.1.3)

5. Water heaters located in the attic need a 30"x30" access within 20' of the water heater. A 30"x36" working platform is required at the water heater. A 24" wide catwalk is required from the access to the platform. A permanent ladder shall be installed if the access is more than 8' above the floor. A light with a switch at the access is required. (UPC §511.0)

6. Water heaters located in the attic need a water-tight drip pan with a ¾" drain to the exterior of the building. (UPC §510.7)

7. All water heaters need to be strapped to the building with at least two straps to prevent seismic movement. One strap within the top third and the other within the bottom third of the water heater. The lower strap shall not be within 4" of the controls. (UPC §510.5)

8. All storage type water heaters need a temperature/pressure relief valve with a ¾" hard pipe drain which terminates 6" to 24" above grade and pointing downward. The drain pipe shall maintain a downward slope to the exterior. (UPC §505.3, §506.2 & §608.5)

9. Where a pressure regulator or storage type water heater are present, an approved, listed expansion tank or other device shall be installed to control intermittent thermal expansion. (UPC §608.3)

10. Anti-siphon devices are required at all hose bibbs, both interior and exterior, except the clothes washer connection. This is to prevent the possible backflow of contaminated water into the potable water system. (UPC §**603.4.7**)

11. Water piping installed above 5000' elevation needs to be protected from freezing. The piping shall not be installed in uninsulated areas or in exterior walls unless installed on the heated side of R-19 insulation. Underground piping is to be 36" deep. (PCC Art 15.04.050, Q)

12. Shower walls shall be finished with a hard, non-absorbent surface to a height not less than 70" above the drain inlet. The floor area of a shower needs to be at least 1024 in² with a minimum dimension of 30". (UBC §807.1.3 & UPC §**412.7**)

13. A minimum of 24" is required in front of the toilet bowl and the toilet is to be centered in a 30" wide space. (UBC §2904)

14. The heating system must be capable of maintaining a room temperature of 70°F at a point 3' above the floor in all habitable rooms. (UBC §310.11) A ducting system from the wood stove location to remote rooms of the house may be needed.

15. Mechanical equipment needs to be secured in place. (UMC §308.1)

16. A furnace located under the floor requires a minimum 30"x30" access within 20' of the unit. Provide a receptacle and a light at or near the unit with the light switch at the access. (UMC §307.4)

17. Mechanical equipment located in an attic is required to have a minimum 30"x30" access, a 22"x30" access may be used provided the largest piece of equipment can be removed through the opening. The access is required to be within 20' of the unit. A level 30" deep working platform is required on the control side of the unit. A 24" wide catwalk with a solid floor is required from the access to the platform. Provide a receptacle and a light at or near the unit with the light switch at the access. (UMC §307.3)

18. A furnace in locations other than the attic or under-floor require a 24" wide access and 30" deep clear working space. (UMC §**307.2**) A furnace located outside must be listed for weather-exposure and be mounted on a concrete pad 3" above the ground. (UMC §**304.3** & §**304.8**) A furnace mounted on the roof must be listed for weather-exposure. If mounted on roofs over a 4:12 pitch a **24"** wide catwalk and a 30" deep level working platform with a guardrail shall be provided on the control side of the unit. (UMC §**307.5**)

19. A ¾" condensate drain and overflow drain are required for any air conditioning system located within the building. The main drain is to terminate in an approved location, but not on a walking surface. The overflow drain must terminate in a visible location. The minimum slope of these drains is ⅛" per foot. (UMC §309)

20. Floor and wall furnaces are to be installed per the manufacturer's specifications. (UMC §303.1)

21. Combustion air vents are required within 12" of the top and bottom of enclosures with fuel burning appliances. Vents shall have ¼" mesh screens. (UMC §702) Combustion vents open to the attic need to be provided with a non-combustible sleeve which extends 6" above the ceiling joists and insulation and are not to be equipped with screens. (UMC §703.1)

22. A Type 'B' vent for gas burning appliances needs to extend at least 1' above the roof penetration for roofs up to a **6**/12 pitch and be at least 8' from any portion of the building. A Type 'L' vent for oil burning appliances needs to extend 2' above the roof penetration and also be at least 2' above the roof or any portion of the building within 10' of the vent. The minimum total height of the vent shall be a minimum of 5' from the appliance vent collar to the vent termination. (UMC §806.0)

23. LPG appliances and water heaters are not to be installed in a pit, basement or similar location where heavier-than-air gas might collect. LPG appliances and water heaters shall not be installed in an above-grade-under-floor space or basement unless such location is provided with an approved means for removal of unburned gas. (UPC §1213.5 & UMC §304.5)

24. Early gas may be approved once all the gas piping system has been installed and tested, and at least one gas burning appliance has been completely installed and inspected, and all gas piping is covered or concealed within the building. (UPC §1208.0)

25. A 30" clearance is required from a cooking appliance top to combustible materials (cabinets). Side clearances shall be as specified by a permanent marking on the cooking appliance. (UMC §906.1)

26. The clothes dryer exhaust duct is limited 14' total length, including elbows, from the clothes dryer to the point of termination. Reduce this length by 2' for every elbow in excess of 2. (UMC §504.3 & §908.1) When longer runs are unavoidable, consult the Placer County Building Department handout.

27. Kitchen hoods, bathroom fans and other exhaust fans shall have a back draft damper. (UMC §504.1)

28. Propane tanks are to be installed per the Uniform Fire Code. For specifics contact your local fire department.

29. Vents for fuel burning appliances shall terminate not less than 4' below, 4' horizontally from or 1' above any door, window or other opening into the structure. (UMC §806.6 & UPC §906.2)

ELECTRICAL

(EL)

1. A ground fault circuit interrupter (GFCI) is required for all 120 volt receptacles installed in bathrooms, garages, outdoors, in unfinished basements, under-floor areas, kitchen counter tops and within 6' of a bar sink. Receptacles located in garages or unfinished basements that are for a dedicated purpose, such as for a clothes washer or central vacuum, may have a receptacle that is not protected by GFCI. (NEC §210-8)

2. Incandescent lights in a clothes closet need 12" minimum clearance from combustibles, such as walls or edge of the shelf, measured horizontally. 6" horizontal clearance is allowed for recessed incandescent lights with covers or fluorescent fixtures. (NEC §410-8)

3. Recessed incandescent light fixtures in insulated ceilings shall be approved, listed, zero-clearance insulation cover (IC) type. (California Energy Commission §130b 4)

4. A 120 volt weather-proof receptacle is required within 25' of the mechanical equipment when located on the roof. (UMC §**306.3**)

5. Electrical disconnects for equipment such as well pumps, HVAC units, septic pumps, etc. shall be within sight and 50' or less from the equipment. (NEC §430-102b)

6. A temporary construction power panel needs to be installed on a treated post, have a driven ground rod and a 20 amp GFCI weather-proof receptacle. (NEC §305-6 & §250-83c)

7. Early electrical service may be approved once the meter panel is set and properly grounded to the UFER. A 120 volt, 20 amp GFCI receptacle is required. If the structure is not weather-tight the receptacle, box, panel and conductors need to be weather-proof. (NEC Art. 305)

8. Receptacle outlets shall be spaced such that any point along the wall at the floor level is not more than 6' from a receptacle without crossing a doorway. Wall spaces greater than 2' in width shall be provided with a receptacle. These receptacles shall be provided in kitchens, family rooms, dining rooms, living rooms, dens, bedrooms, or similar rooms. (NEC §210-52a)

9. Counter top receptacles in the kitchen or dining room shall be spaced such that any point along the wall at the counter level is not more than 2' from a receptacle. Any counter space more than 12" wide shall be provided with a receptacle. **Peninsular or island counters are to be provided with at least one receptacle.** These receptacles are to be located within 12" of the counter top and are not to be face up in the counter. Counter tops interrupted by ranges, sinks, or other appliances shall be considered separate counters. (NEC §210-52c)

10. Kitchens counters shall be equipped with two or more 20 amp circuits for small appliances. (NEC §210-52b)

11. Electrical meter panels, sub-panels and disconnects, such as at the air conditioner, require a minimum clear working space of not less than 30" wide by 36" deep and 6'-6" high. (NEC §110-16)

12. Bathroom receptacles are to be supplied by at least one 20 amp branch circuit. This circuit shall have no other outlets. (NEC §210-52d)

13. Dwelling Unit Bedrooms. All branch circuits that supply 125 volt, single-phase, 15- and 20-ampere receptacle outlets installed in dwelling unit bedrooms shall be protected by an arc-fault circuit interrupter(s). (99 NEC, Art 210-12)

FIREPLACE/WOODSTOVE

(FP)

1. Factory-built chimneys for residential-type appliances and masonry chimneys must terminate at least 3' above the roof penetration and must also be at least 2' above any roof within 10' of the chimney or in accordance with the manufacturer's listing, whichever is greater. (UBC §3102.3.6 & UMC §814.5)

2. Woodstoves are to be listed by a nationally recognized testing agency, such as Underwriters Laboratories. The installation is to be per that listing. Unlisted woodstoves are not to be installed. (UBC §3102.5.1)

3. For buildings above 5000' elevation, factory-built chimneys serving a solid fuel burning appliance shall be enclosed in a chase lined with ½" gypsum wallboard. (PCC Art 15.04.050, T)

4. Chimney chases to be accessible for inspection and maintenance, such as a removable metal cap or access panel. (PCC Art 15.04.050, T)

5. When a flue chase is provided it needs to be fireblocked at the floor and ceiling lines. (UBC §708.2.1)

6. The hearth extension for a masonry fireplace needs to extend 16" in front of and 8" beyond the sides of the firebox when the opening is less than 6 ft² and 20" in front of and 12" beyond the sides where the opening is larger than 6 ft². The hearth needs to be of non-combustible material. (UBC §3102.7.12) Woodstoves and factory-built fireplaces may require a larger hearth, consult the manufacturer's specifications. (UBC §3102.5.2)

7. Masonry chimneys less than 40" wide need 4 vertical #4 rebar with #2 rebar hoop ties every 18". The chimney needs to be anchored to the building at each ceiling and floor line by 2 steel straps. (UBC §3102.4.3)

8. Combustible materials (mantels) are not to be within 6" of the opening of a masonry fireplace. (UBC §3102.7.8) For factory-built fireplaces and woodstoves consult the manufacturer's specifications. (UBC §3102.5.1)

9. Spark arresters with ⅜"-½" mesh are required on all solid fuel burning chimneys. (UBC §3102.3.8)

10. Wood framed chimney chases need to be anchored to the roof framing by means of straps at all corners or by integral framing with the roof structure. Nailing of the chase wall framing plate to the roof framing is not acceptable. (UBC §1605)

VENEER/STUCCO
(VS)

1. Masonry veneer up to 5" thick shall be installed with brick ties 24" o.c. vertically and horizontally with a #9 wire secured to the brick ties and laid in the mortar joint, or the veneer may be applied over stucco lath. Veneer over 4' high must be inspected during construction. (UBC §1403.6.4.2)

2. When veneer or stucco is applied to a weather-exposed wall where there is human occupancy, there needs to be a felt or kraft paper weather-resistive barrier installed behind the veneer or stucco. (UBC §1402.1)

3. A corrosion resistant weep screed which will allow water trapped behind the stucco to drain to the exterior of the building is required below the stucco at the foundation plate line. The weep screed must have 4" clearance above the ground and 2" above a concrete/asphalt surface. (UBC §2506.5)

4. One-coat stucco systems are to be installed per the manufacturer's specifications by an installer certified by the manufacturer. The installer needs to provide a certificate of compliance to the field inspector in accordance with the manufacturer's criteria prior to final inspection. (UBC §2501.1)

SPAN TABLES

Span tables are based on the span tables from UBC Chapter 23 for Douglas Fir - Larch.
Spans are for repetitive use of three or more members only, not single use.
Rafter spans are for roof pitch of 3:12 or more.

FLOOR JOISTS
40 PSF LIVE LOAD / 10 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 6	S.S.	11'-4"	10'-4"	9'-0"
	#1	10'-11"	9'-11"	8'-8"
	#2	10'-9"	9'-9"	8'-2"
2 x 8	S.S.	15'-0"	13'-7"	11'-11"
	#1	14'-5"	13'-1"	11'-3"
	#2	14'-2"	12'-7"	10'-2"
2 x 10	S.S.	19'-1"	17'-4"	15-2"
	#1	18'-5"	16'-5"	13'-4"
	#2	18'-0"	15'-8"	12'-8"
2 x 12	S.S.	23'-3"	21'-1"	18'-5"
	#1	21'-11"	19'-1"	15'-4"
	#2	20'-6"	17'-7"	14'-4"

CEILING JOISTS
10 PSF LIVE LOAD / 5 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 4	S.S.	13'-2"	11'-11"	10'-5"
	#1	12'-8"	11'-6"	10'-0"
	#2	12'-5"	11'-3"	9'-10"
2 x 6	S.S.	20'-8"	18'-9"	16'-4"
	#1	19'-11"	17'-8"	15'-9"
	#2	19'-6"	17'-8"	14'-9"
2 x 8	S.S.		24'-8"	21'-7"
	#1		23'-10"	19'-11"
	#2	25'-8"	22'-10"	18'-6"
2 x 10	S.S.			26'-0"
	#1			24'-3"
	#2	26'-0"	25'-5"	22'-11"

RAFTERS - LIGHT ROOFING w/NO DRYWALL
20 PSF LIVE LOAD / 10 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 4	S.S.	11'-4"	10'-4"	9'-0"
	#1	10'-9"	9'-4"	7'-7"
	#2	10'-1"	8'-9"	7'-2"
2 x 6	S.S.	17'-10"	16'-3"	13'-3"
	#1	15'-11"	13'-9"	11'-3"
	#2	14'-9"	12'-10"	10'-5"
2 x 8	S.S.	23'-7"	20'-11"	17'-1"
	#1	20'-3"	17'-8"	14'-4"
	#2	18'-9"	16'-3"	13'-3"
2 x 10	S.S.	25'-10"	25'-4"	20'-8"
	#1	23'-11"	20'-8"	18'-11"
	#2	22'-10"	19'-10"	16'-2"

RAFTERS - LIGHT ROOFING w/DRYWALL
20 PSF LIVE LOAD / 15 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 6	S.S.	16'-1"	14'-8"	12'-7"
	#1	14'-8"	12'-9"	10'-5"
	#2	13'-8"	11'-10"	9'-8"
2 x 8	S.S.	21'-3"	19'-5"	15'-10"
	#1	18'-9"	16'-3"	13'-3"
	#2	17'-4"	15'-0"	12'-3"
2 x 10	S.S.	25'-6"	23'-5"	19'-2"
	#1	23'-0"	19'-11"	16'-3"
	#2	21'-2"	18'-4"	15'-0"
2 x 12	S.S.		26'-0"	22'-8"
	#1	25'-9"	22'-4"	18'-2"
	#2	24'-7"	21'-3"	17'-4"

RAFTERS - HEAVY ROOFING w/NO DRYWALL
20 PSF LIVE LOAD / 15 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 4	S.S.	11'-4"	10'-3"	8'-6"
	#1	9'-11"	8'-7"	7'-0"
	#2	9'-4"	8'-1"	6'-7"
2 x 6	S.S.	17'-10"	15'-5"	12'-7"
	#1	14'-8"	12'-9"	10'-5"
	#2	13'-8"	11'-10"	9'-8"
2 x 8	S.S.	22'-4"	19'-5"	15'-10"
	#1	18'-9"	16'-3"	13'-3"
	#2	17'-4"	15'-0"	12'-3"
2 x 10	S.S.	25'-6"	23'-5"	19'-2"
	#1	23'-8"	19'-11"	16'-3"
	#2	21'-2"	18'-4"	15'-0"

RAFTERS - HEAVY ROOFING w/DRYWALL
20 PSF LIVE LOAD / 20 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 6	S.S.	16'-3"	14'-5"	11'-9"
	#1	13'-9"	11'-11"	9'-9"
	#2	12'-10"	11'-1"	9'-1"
2 x 8	S.S.	20'-11"	18'-1"	14'-10"
	#1	17'-6"	15'-2"	12'-5"
	#2	16'-3"	14'-0"	11'-6"
2 x 10	S.S.	25'-4"	21'-11"	17'-11"
	#1	21'-6"	18'-8"	15'-3"
	#2	19'-10"	17'-2"	14'-0"
2 x 12	S.S.		25'-11"	21'-2"
	#1	24'-1"	20'-10"	17'-0"
	#2	23'-0"	19'-11"	16'-3"

RAFTERS - LIGHT ROOFING w/NO DRYWALL
30 PSF LIVE LOAD / 10 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 4	S.S.	9'-10"	9'-0"	7'-10"
	#1	9'-4"	8'-1"	6'-7"
	#2	8'-9"	7'-7"	6'-2"
2 x 6	S.S.	15'-6"	14'-1"	11'-9"
	#1	13'-9"	11'-11"	9'-9"
	#2	12'-10"	11'-1"	9'-1"
2 x 8	S.S.	20'-5"	18'-1"	14'-10"
	#1	17'-6"	15'-2"	12'-5"
	#2	16'-3"	14'-0"	11'-6"
2 x 10	S.S.	25'-4"	21'-11"	17'-11"
	#1	21'-8"	18'-8"	15'-3"
	#2	19'-10"	17'-2"	14'-0"

RAFTERS - LIGHT ROOFING w/DRYWALL
30 PSF LIVE LOAD / 15 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 6	S.S.	14'-2"	13'-0"	11'-1"
	#1	13'-0"	11'-3"	9'-2"
	#2	12'-1"	10'-5"	8'-6"
2 x 8	S.S.	18'-5"	17'-1"	13'-11"
	#1	16'-6"	14'-4"	11'-8"
	#2	15'-3"	13'-3"	10'-10"
2 x 10	S.S.	23'-11"	20'-8"	16'-11"
	#1	20'-4"	17'-7"	14'-4"
	#2	18'-8"	16'-2"	13'-2"
2 x 12	S.S.	25'-7"	24'-5"	20'-0"
	#1	22'-8"	19'-8"	16'-1"
	#2	21'-8"	18'-9"	15'-4"

RAFTERS - HEAVY ROOFING w/NO DRYWALL
30 PSF LIVE LOAD / 15 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 4	S.S.	10'-0"	9'-0"	7'-6"
	#1	8'-9"	7'-7"	6'-3"
	#2	8'-3"	7'-2"	5'-10"
2 x 6	S.S.	15'-8"	13'-7"	11'-1"
	#1	13'-0"	11'-3"	9'-2"
	#2	12'-1"	10'-5"	8'-6"
2 x 8	S.S.	19'-9"	17'-1"	13'-11"
	#1	16'-6"	14'-4"	11'-8"
	#2	15'-3"	13'-3"	10'-10"
2 x 10	S.S.	23'-11"	20'-8"	16'-11"
	#1	20'-4"	17'-7"	14'-4"
	#2	18'-8"	16'-2"	13'-2"

RAFTERS - HEAVY ROOFING w/DRYWALL
30 PSF LIVE LOAD / 20 PSF DEAD LOAD

		12" o.c.	16" o.c.	24" o.c.
2 x 6	S.S.	14'-2"	12'-11"	10'-6"
	#1	12'-4"	10'-8"	8'-8"
	#2	11'-5"	9'-11"	8'-1"
2 x 8	S.S.	18'-9"	16'-3"	13'-3"
	#1	15'-8"	13'-7"	11'-1"
	#2	14'-6"	12'-7"	10'-3"
2 x 10	S.S.	22'-8"	19'-7"	16'-0"
	#1	19'-3"	16'-8"	13'-7"
	#2	17'-9"	15'-4"	12'-6"
2 x 12	S.S.	26'-0"	23'-2"	18'-11"
	#1	21'-7"	18'-8"	15'-3"
	#2	20'-6"	17'-9"	14'-6"

NAILING SCHEDULE - UBC TABLE NO. 23-II-B-1

	CONNECTION	NAILING[1]
1.	Joist to sill or girder, toenail	3-8d
2.	Bridging to joist, toenail each end	2-8d
3.	1"x 6" subfloor or less to each joist, face nail	2-8d
4.	Wider than 1"x 6" subfloor to each joist, face nail	3-8d
5.	2" subfloor to joist or girder, blind and face nail	2-16d
6.	Sole plate to joist/blocking, face nail Sole plate to joist/blocking, at braced wall panels	16d at 16" o.c. 3-16d per 16"
7.	Top plate to stud, end nail	2-16d
8.	Stud to sole plate	4-8d toenail, or 2-16d end nail
9.	Double studs, face nail	16d at 24" o.c.
10.	Double top plates, face nail Double top plates, lap splice	16d at 16" o.c. 8-16d
11.	Blocking between joists/rafters, toenail to top plate	3-8d
12.	Rim joist to top plate, toenail	8d at 6" o.c.
13.	Top plates, laps and intersections, face nail	2-16d
14.	Continuous header, two pieces	16d at 16" o.c. along each edge
15.	Ceiling joists to plate, toenail	3-8d
16.	Continuous header to stud, toenail	4-8d
17.	Ceiling joists, laps over partitions, face nail	3-16d
18.	Ceiling joists to parallel rafters, face nail	3-16d
19.	Rafter to plate, toenail	3-8d
20.	1" diagonal brace to each stud and plate, face nail	2-8d
21.	1"x 8" sheathing or less to each bearing, face nail	2-8d
22.	Wider than 1"x 8" sheathing to each bearing, face nail	3-8d
23.	Built-up corner studs	16d at 24" o.c.
24.	Built-up girder and beams	20d at 32" o.c. staggered at top & bottom w/2-20d at ends and splices
25.	2" planks (subfloor/decking)	2-16d at each bearing
26.	Plywood and particle board:[5] Subfloor, roof and wall sheathing (to framing): ½" or less	6d[2]
	$^{19}/_{32}$"-$^{3}/_{4}$"	8d[3] or 6d[4]
	$^{7}/_{8}$"-1"	8d[2]
	$1^{1}/_{8}$"-$1^{1}/_{4}$"	10d[3] or 8d[4]
	Combination Subfloor-underlayment (to framing): $^{3}/_{4}$" or less	6d[4]
	$^{7}/_{8}$"-1"	8d[4]
	$1^{1}/_{8}$"-$1^{1}/_{4}$"	10d[3] or 8d[4]
27.	Panel Siding (to framing): $^{1}/_{2}$" or less	6d[6]
	$^{5}/_{8}$"	8d[6]
28.	Fiberboard Sheathing:[7] $^{1}/_{2}$"	No. 11 ga[8] 6d[3] No. 16 ga[9]
	$^{25}/_{32}$"	No. 11 ga[8] 8d[3] No. 16 ga[9]

[1] Common or box nails may be used except where stated.
[2] Common or deformed shank.
[3] Common.
[4] Deformed shank.
[5] Nails spaced at 6" on center at edges, 12" at intermediate supports except 6" at all supports where spans are 48" or more. For nailing of plywood and particleboard diaphragms and shear walls, refer to UBC §2314.1. Nails for wall sheathing may be common, box or casing.
[6] Corrosion-resistant siding or casing nails conforming to the requirements of UBC §2325.1.
[7] Fasteners spaced at 3" on center at exterior edges and 6" on center at intermediate supports.
[8] Corrosion-resistant roofing nails with $^{7}/_{16}$" diameter head and 1½" length for ½" sheathing and 1¾" length $^{25}/_{32}$" sheathing conforming to UBC §2325.1.
[9] Corrosion-resistant staples with nominal $^{7}/_{16}$" crown and 1⅛" length for ½" sheathing and 1½" length for $^{25}/_{32}$" sheathing conforming to UBC §2325.1.